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Simulations of K-shell Photoabsorption in Solid Density Plasmas R. S. WALLING, R. SHEPHERD, C. A. IGLESIAS, R. W. LEE, R. E. STEWART*, Lawrence Livermore National Laboratory — Only sparse experimental data currently exists for the equation of state of high-density materials heated to temperatures of 10's of eVs. In particular are questions of the ionization balance, line shapes, and spectral shifts of absorption edges and line positions. Using the 100-fs timescale of the laser heating pulse, ultrashort-pulse lasers heat material inside layered targets to 10's of eVs . Targets are thin foils of Be embedded in plastic. Plama conditions in the Be depend on the thickness of the layers and choice of laser parameters. We use the hydrodynamics code LASNEX to simulate the heating, energy conduction, and shock formation in targets heated by a 100-fs laser. Using the LTE opacity code OPAL, we calculate the absorption spectra for Be K-shell. Together, the OPAL and LASNEX codes predict changes in the Be absorption spectra over several picoseconds as the Be layer heats and then cools.

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